



# WORD PROBLEM EQUATIONS

## LESSON 8

Jan 21-8:53 AM

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# STEPS TO SOLVING WORD PROBLEMS

1. Use a variable to represent the unknown quantity.
2. Express any other unknown quantities in terms of this variable, if possible
3. Write an equation, and solve it.
4. State the answer to the problem.
5. Check your answer by substituting in the problem

Jan 28-9:59 AM

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## EXAMPLE 1:

Seven percent of a number is 56.7

7%  $\xrightarrow{\text{multiply}}$   $\xrightarrow{\text{equal}}$   $\xrightarrow{\text{Percent} \rightarrow \text{Decimal}}$   $7\% \div 100 = 0.07$

Let  $x$  represent the number.

$$\begin{array}{r} 0.07x = 56.7 \\ \hline 0.07 \quad 0.07 \\ \hline x = 810 \end{array}$$

The number is 810

### Things to Remember

Use a variable to represent the unknown quantity

Express any other unknown quantities in terms of this variable, if possible

Write an equation, and solve it.

State the answer to the problem

Check your answer by substituting in the problem.

Jan 21-8:55 AM

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## EXAMPLE 2:

Nine percent of a number is 43.87

9%  $\xrightarrow{\text{multiply}}$   $\xrightarrow{\text{equal}}$   $\xrightarrow{\text{Percent} \rightarrow \text{Decimal}}$   $9\% \div 100 = 0.09$

Let  $x$  represent the number.

$$\begin{array}{r} 0.09x = 43.87 \\ \hline 0.09 \quad 0.09 \\ \hline x = 487.4 \end{array}$$

The number is 487.4

### Things to Remember

Use a variable to represent the unknown quantity

Express any other unknown quantities in terms of this variable, if possible

Write an equation, and solve it.

State the answer to the problem

Check your answer by substituting in the problem.

Jan 21-8:55 AM

Practice	YOU TRY!
Thirteen percent of a number is 34.9	
<div>Let <math>x</math> represent the number</div> $\begin{array}{r} 0.13x = 34.9 \\ \hline 0.13 \quad 0.13 \\ \hline x = 268.46 \end{array}$ <p>Sentence.</p>	<div>Things to Remember</div> <p>Use a variable to represent the unknown quantity</p> <p>Express any other unknown quantities in terms of this variable, if possible</p> <p>Write an equation, and solve it.</p> <p>State the answer to the problem</p> <p>Check your answer by substituting in the problem.</p>

Jan 21-8:55 AM

Connect	EXAMPLE 3:
Dan works in a clothing store. He earns \$1435 a month, plus a commission of 8% of his sales. One month, Dan earned \$2234. What was Dan's sales for the month?	
<div>Let <math>x</math> represent Dan's sales for the month.</div> $\begin{array}{r} 1435 + 0.08x = 2234 \\ \hline 0.08x = 2234 - 1435 \\ \hline 0.08x = 799 \\ \hline x = 9987.50 \end{array}$ <p>Dan's sales for the month are \$9987.50</p>	<div>Things to Remember</div> <p>Use a variable to represent the unknown quantity</p> <p>Express any other unknown quantities in terms of this variable, if possible</p> <p>Write an equation, and solve it.</p> <p>State the answer to the problem</p> <p>Check your answer by substituting in the problem.</p>

Jan 21-8:55 AM

Practice	YOU TRY!
Kari works at a electronics store. She earns \$1543 a month, plus 7% commission on all sales. Kari earned \$2354 last month. Determine Kari sales for the month.	
<div>Let <math>x</math> represent Kari's sales</div> $\begin{array}{r} 1543 + 0.07x = 2354 \\ \hline 0.07x = 2354 - 1543 \\ \hline 0.07x = 811 \\ \hline 0.07 \quad 0.07 \\ \hline x = 11585.71 \end{array}$ <p>Kari's sales.</p>	<div>Things to Remember</div> <p>Use a variable to represent the unknown quantity</p> <p>Express any other unknown quantities in terms of this variable, if possible</p> <p>Write an equation, and solve it.</p> <p>State the answer to the problem</p> <p>Check your answer by substituting in the problem.</p>

Jan 21-8:55 AM

Connect	EXAMPLE 4:
An item increased in price by \$5.20 last month. This is a 6% increase in price. What did the item cost before the price increase?	
<div>Let <math>x</math> represent the item before increase in price.</div> $\begin{array}{r} \frac{\text{original} - \text{New}}{\text{original}} = \% \text{ increase} \\ \hline \frac{5.20}{x} = 0.06 \\ \hline x \left[ \frac{5.20}{x} \right] = 0.06x \\ \hline \frac{5.20}{0.06} = \frac{0.06x}{0.06} \\ \hline x = 86.66 \end{array}$	<div>Things to Remember</div> <p>Use a variable to represent the unknown quantity</p> <p>Express any other unknown quantities in terms of this variable, if possible</p> <p>Write an equation, and solve it.</p> <p>State the answer to the problem</p> <p>Check your answer by substituting in the problem.</p>

Jan 21-8:55 AM

## Practice

## YOU TRY!

An item increased by \$3.45 last week. This is a 12% increase. What did the item cost before the price increase?

Let  $x$  represent cost before the price increase.

$$\frac{\text{New} - \text{Original}}{\text{original}} = \% \text{ increase}$$

$$\frac{3.45}{x} = 0.12$$

$$x \left[ \frac{3.45}{x} \right] = 0.12x$$

$$\frac{3.45}{0.12} = \frac{0.12x}{0.12}$$

$$\$28.75 = x$$

## Things to Remember

Use a variable to represent the unknown quantity

Express any other unknown quantities in terms of this variable, if possible

Write an equation, and solve it.

State the answer to the problem

Check your answer by substituting in the problem.

## Practice

## CLASSWORK

Page 273 #15, 16, 17

Page 274 #22

Page 285 - Check #1

Jan 21-8:55 AM

Jan 21-8:55 AM